

Appl.No.09/751,545
Amtd.dated Jan.15,2004
Reply to Office action of April 3, 2003

Amendments to the Claims:

Please cancel without prejudice claims 1-30.

Please add new claims 31-60 as indicated below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1. - 30. (Canceled)

31. (New) A method, comprising:

AS
receiving a request for updating a file having a plurality of fragments stored in a memory,
the request including changed data for updating a first fragment of the file;
creating a second fragment based on the first fragment and the changed data;
copying a first table associated with the first fragment to form a second table, the second
table having a handle referencing the second fragment; and
deleting the first fragment when the creating and copying operations are completed.

32. (New) The method of claim 31, further comprising marking, via the first table, the first
fragment as invalid while the creating and copying operations are being performed.

33. (New) The method of claim 32, further comprising:

determining whether the request has been cancelled before the creating and copying
operations are completed;

marking the first fragment as valid if request has been cancelled before the creating and copying operations are completed; and
deleting the second fragment and the second table after marking the first fragment as valid.

34. (New) The method of claim 31, further comprising deleting the first table when the creating and copying operations are completed.

35. (New) The method of claim 31, further comprising marking, via the second table, the second fragment as a backup copy of the first segment while the creating and copying operations are being performed.

36. (New) The method of claim 35, further comprising unmarking the second fragment as the backup copy of the first segment after the creating and copying operations are completed.

37. (New) The method of claim 31, wherein the copying the first table comprises writing the handle into a replacement entry.

38. (New) The method of claim 37, wherein the writing the handle comprises marking a handle pointing to the first fragment as invalid and marking the handle pointing to the second fragment as valid.

39. (New) The method of claim 31, wherein the first table is a member of a first chain

having a plurality of tables, the method further comprises:

creating a copy for each of the plurality tables in the first chain to form a second chain,

each of the copied table having a handle pointing to the next copied table in the second chain;

replacing the first chain with the second chain; and

deleting the first chain.

40. (New) The method of claim 39, wherein each table in the first and second chains is hierarchically ranked at a different level and wherein each table is capable of associating with one or more tables in the respective chain via one or more handles respectively.

41. (New) A machine-readable medium having executable code to cause a machine to perform a method, the method comprising:

receiving a request for updating a file having a plurality of fragments stored in a memory,

the request including changed data for updating a first fragment of the file;

creating a second fragment based on the first fragment and the changed data;

copying a first table associated with the first fragment to form a second table, the second table having a handle referencing the second fragment; and

deleting the first fragment when the creating and copying operations are completed.

42. (New) The machine-readable medium of claim 41, wherein the method further comprises marking, via the first table, the first fragment as invalid while the creating and copying operations are being performed.

43. (New) The machine-readable medium of claim 42, wherein the method further comprises:

determining whether the request has been cancelled before the creating and copying operations are completed;

marking the first fragment as valid if request has been cancelled before the creating and copying operations are completed; and

deleting the second fragment and the second table after marking the first fragment as valid.

44. (New) The machine-readable medium of claim 41, wherein the method further comprises deleting the first table when the creating and copying operations are completed.

45. (New) The machine-readable medium of claim 41, wherein the method further comprises marking, via the second table, the second fragment as a backup copy of the first segment while the creating and copying operations are being performed.

46. (New) The machine-readable medium of claim 45, wherein the method further comprises unmarking the second fragment as the backup copy of the first segment after the creating and copying operations are completed.

47. (New) The machine-readable medium of claim 41, wherein the copying the first table comprises writing the handle into a replacement entry.

48. (New) The machine-readable medium of claim 47, wherein the writing the handle comprises marking a handle pointing to the first fragment as invalid and marking the handle pointing to the second fragment as valid.

AS
49. (New) The machine-readable medium of claim 41, wherein the first table is a member of a first chain having a plurality of tables, the method further comprises:
creating a copy for each of the plurality tables in the first chain to form a second chain,
each of the copied table having a handle pointing to the next copied table in the
second chain;
replacing the first chain with the second chain; and
deleting the first chain.

50. (New) The machine-readable medium of claim 49, wherein each table in the first and second chains is hierarchically ranked at a different level and wherein each table is capable of associating with one or more tables in the respective chain via one or more handles respectively.

51. (New) A data storage system, comprising:
a processor;

a memory coupled to the processor;
a process executed by the processor from the memory having a data object manager to receive a request for updating a file having a plurality of fragments stored in the memory, the request including changed data for updating a first fragment of the file,
create a second fragment based on the first fragment and the changed data,
copy a first table associated with the first fragment to form a second table, the second table having a handle referencing the second fragment, and
delete the first fragment when the creating and copying operations are completed.

52. (New) The system of claim 51, wherein the data object manager further marks, via the first table, the first fragment as invalid while the creating and copying operations are being performed.

53. (New) The system of claim 52, wherein the data object manager is further to:
determine whether the request has been cancelled before the creating and copying operations are completed;
mark the first fragment as valid if request has been cancelled before the creating and copying operations are completed; and
delete the second fragment and the second table after marking the first fragment as valid.

54. (New) The system of claim 51, wherein the data object manager further deletes the first table when the creating and copying operations are completed.

55. (New) The system of claim 51, wherein the data object manager further marks, via the second table, the second fragment as a backup copy of the first segment while the creating and copying operations are being performed.

56. (New) The system of claim 55, wherein the data object manager further unmarks the second fragment as the backup copy of the first segment after the creating and copying operations are completed.

57. (New) The system of claim 51, wherein the copying the first table comprises writing the handle into a replacement entry.

58. (New) The system of claim 57, wherein the writing the handle comprises marking a handle pointing to the first fragment as invalid and marking the handle pointing to the second fragment as valid.

59. (New) The system of claim 51, wherein the first table is a member of a first chain having a plurality of tables, wherein the data object manager is further to:
create a copy for each of the plurality tables in the first chain to form a second chain,
each of the copied table having a handle pointing to the next copied table in the second chain;
replace the first chain with the second chain; and
delete the first chain.

60. (New) The system of claim 59, wherein each table in the first and second chains is hierarchically ranked at a different level and wherein each table is capable of associating with one or more tables in the respective chain via one or more handles respectively.
